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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

		Application Number	10/718,985
		Filing Date	November 21, 2003
		First Named Inventor	Mark S. Olsson
		Group Art Unit	2875
		Examiner Name	Jason Han
Total Number of Pages in This Submission	15	Attorney Docket Number	0009-053

ENCLOSURES ***(check all that apply)***

- ___ Fee Transmittal Form
  - ___ Fee Attached
- ___ Amendment/Response
  - ___ After Final
- ___ Extension of Time Request
- ___ Express Abandonment Request
- ___ Information Disclosure Statement
- ___ Certified Copy of Priority Document(s)
- ___ Response to Missing Parts/ Incomplete Application
  - ___ Response to Missing Parts Under 37 CFR 1.52 or 1.53
- ___ Assignment Papers *(for an Application)*
- ___ Drawing(s)
- ___ Licensing-related Papers
- ___ Petition Checklist and Accompanying Petition
- ___ To Convert a Provisional Application
- ___ Power of Attorney, Revocation Change of Correspondence Address
- ___ Terminal Disclaimer
- ___ After Allowance Communication to Group
- ___ Appeal Communication to Board of Appeals and Interferences
- ✓ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*
- ___ Proprietary Information
- ___ Status Letter
- ✓ Additional Enclosure(s) *(please identify below):*

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Transmitted herewith further to the Notice of Appeal filed June 13, 2005 are the following: Fee Transmittal Sheet, in duplicate, with $250 Check for the required fee; an Appeal Brief, with three copies; and a prepaid Return Postcard.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual Name	(Atty)	Michael H. Jester Reg. No. 28,022 A Professional Law Corporation
Signature		
Date		July 29, 2005

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail (postage pre-paid) in an envelope addressed to: Board of Patent Appeals and Interferences, Director of Patents and Trademarks, P.O. Box 1450, Alexandria, Virginia 22313-1450 on:

July 29, 2005

Typed or printed name	Michael H. Jester		
Signature	✓	Date	7-29-05 ✓

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FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1.
These are the fees effective October 1, 1997.
Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12
See 37 C.F.R. §§ 1.27 and 1.28

TOTAL AMOUNT OF PAYMENT	$250.00

Complete If Known	
Application Number	10/718,985
Filing Date	November 21, 2003
First Named Inventor	Mark S. Olsson
Examiner Name	Jason Han
Group / Art Unit	2875
Attorney Docket No.	0009-053

METHOD OF PAYMENT (check one)

1. __ The Commissioner is hereby authorized to charge indicated fees and credit any overpayment to:
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2. ✓ Payment Enclosed:
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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Code	($)	Small Entity Code	($)	Fee Description	Fee Paid
1011	300	2011	150	Utility filing fee	
1012	200	2012	100	Design filing fee	
1013	200	2013	100	Plant filing fee	
1014	300	2014	150	Reissue filing fee	
1015	200	2015	100	Provisional filing fee	
				SUBTOTAL (1) ($)	

2. EXTRA CLAIM FEES

Total	__ - 20** =	__ x __	=	
Independent	__ - 3** =	__ x __	=	
Multiple Dependent	__ =	__ x __	=	

** or number previously paid, if greater; For Reissues, see below

Large Entity Code	($)	Small Entity Code	($)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple dependent claim
1204	200	2204	100	** Reissue independent claims over original patent
1205	50	2205	25	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Code	($)	Small Entity Code	($)	Fee Description Fee Paid	
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	120	2251	60	Extension for response within first month	
1252	450	2252	225	Extension for response within second month	
1253	1,020	2253	510	Extension for response within third month	
1254	1,590	2254	795	Extension for response within fourth month	
1255	2,160	2255	1,080	Extension for response within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	250.00
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	500	2452	250	Petition to revive unavoidably abandoned application	
1453	1,500	2453	750	Petition to revive unintentionally abandoned application	
1501	1,400	2501	700	Utility issue fee (or reissue)	
1502	800	2502	400	Design issue fee	
1503	1,100	2503	550	Plant issue fee	
1807	50	1807	50	Petitions related to provisional applications	
1806	180	1806	180	Submission of Information Disclosure Statement	
8021	40	8021	40	Recording each patent assignment per property	
1809	790	2809	395	Filing a submission after final rejection	
1810	790	2810	395	For each additional invention to be examined	

Other fee (specify) Search Fee (500/250)
Other fee (specify) Examination Fee (200/100)
Other fee (specify)
Other fee (specify)

SUBTOTAL (3) ($) 250.00

*Reduced by Basic Filing Fee Paid

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SUBMITTED BY				COMPLETE (if applicable)	
Typed or Printed Name	Michael H. Jester			Reg. Number	28,022
Signature	✓	Date	7-29-05 ✓	Deposit Account User ID	50 0626

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS & INTERFERENCES

In re Patent Application of:	)		
	)		
Mark S. Olsson et al.	)	Examiner:	Jason Han
	)		
Serial No.: 10/718,985	)	Art Unit:	2875
	)		
Filed: November 21, 2003	)	Conf. No.:	4360
	)		
For: ***Thru-Hull Light***	)		

APPEAL BRIEF

BOARD OF PATENT APPEALS & INTERFERENCES
Director of Patents and Trademarks
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicants' Notice of Appeal was filed June 13, 2005, in response to the final Office Action mailed March 16, 2005.

I. Real Party in Interest

The real party in interest is DeepSea Power & Light, a California corporation, with an office at 3855 Ruffin Road, San Diego, California 92123-1813. An assignment of all rights to this application was recorded in the USPTO on April 5, 2004 at Reel 015176, Frame 0050.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of Claims

Claims 1-90 are pending.

Claims 1-90 stand rejected.

Claims 1-90 are appealed.

Claims 1-90 are reproduced in the APPENDIX attached hereto.

IV. Status of Amendments

No amendments have been filed subsequent to the final Office Action mailed March 16, 2005. The examiner has apparently entered the lone Amendment filed February 7, 2005 in response to the first Office Action mailed November 3, 2004.

V. Summary of the Claimed Subject Matter

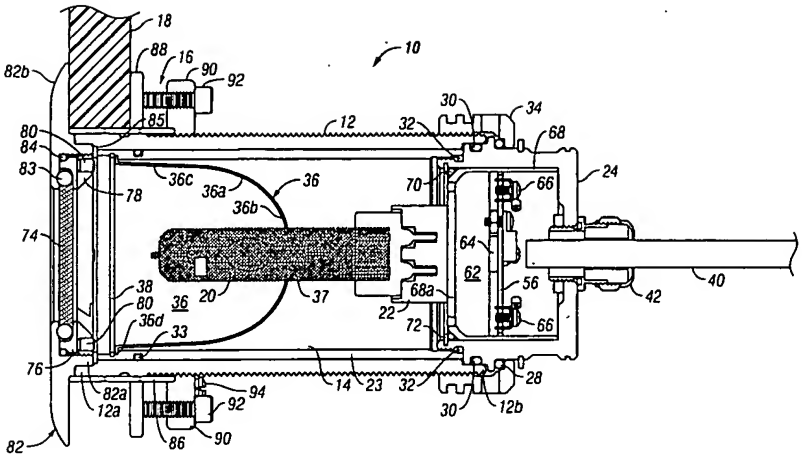
A total of thirteen (13) independent claims are on appeal. The following description of the claimed subject matter refers to exemplary embodiments described in the specification at the referenced page and paragraph numbers and illustrated in the referenced drawing figures. The claimed invention is not limited to the embodiments referred to hereafter. This summary of claimed subject matter is provided merely to comply with 37 CFR Sec. 41.37 and should not be used to limit the scope of protection afforded Applicants' invention.

There are many night time situations in which it is desirable to illuminate the water around a ship, boat or other surface vessel from the vessel itself. Search lights can usually only penetrate the water to a very limited degree. Divers can more safely enter the water around a vessel when the water is illuminated from beneath the surface. Night time search and rescue operations by vessels can be facilitated in this manner. Logs and other semi-submerged obstacles to navigation can be better located from a vessel equipped with under surface illumination. Night time underwater photography near a vessel can also be facilitated with under surface lighting emanating from the

vessel. Fish and other aquatic life are attracted by the light and the aesthetic effects are pleasing to passengers and crew alike.

Lights mounted to the vessel hull and extending externally therefrom create too much drag. Lowering an underwater light or an array of underwater lights from the deck of a vessel via lines and cables is tedious and dangerous. Therefore, a thru-hull light is advantageous for this application. A thru-hull light essentially comprises a cylindrical lamp housing with a forward end that projects through a hole in the hull and is covered by a transparent window. The lamp housing is secured to the hull with a water-tight fitting known as a thru-hull fitting assembly. Numerous problems have been encountered with prior art thru-hull lights, which are solved by the thru-hull light of the present invention.

Independent Claim 1 is directed to a thru-hull light, that, in one exemplary embodiment, comprises a hollow lamp housing 12 (page 5, paragraph 29 and Fig. 1 - reproduced hereafter), a thru-hull fitting assembly 16 connected to a forward end of the lamp housing for mounting the lamp housing in a hole in the hull of a vessel in a water-tight fashion (page 5, paragraph 29, page 10, paragraph 40 and Fig. 1). Page 10, paragraph 41 and Fig. 5 disclose an alternate thru-hull fitting assembly. Claim 1 further calls for a lamp 20 (page 5, paragraph 29 and Fig. 1), and means for mounting the lamp 20 in the interior of the housing 12. In the exemplary embodiment of Fig. 1, the lamp socket 22 (page 5, paragraph 29) corresponds to the lamp mounting means. Claim 1 further calls for a transparent sapphire window 74 extending across a forward end of the lamp housing 12 (page 7, paragraphs 33 and 34). Finally, Claim 1 calls for means for providing a water-tight seal between the sapphire window and the forward end of the lamp housing 12 to prevent water from entering the interior of the lamp housing 12. In the exemplary embodiment of Fig. 1, the sealing ring 76, bezel 82 and O-rings 83 and 84 (page 7, paragraph 33) correspond to the water-tight seal means.



Applicants' Fig. 1

Independent Claim 11 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 11 requires, in addition, a reflector, such as reflector 36 in the exemplary embodiment (page 6, paragraph 30). Claim 11 requires that the reflector be mounted in the lamp housing 12 and have an elliptical section 36a (page 8, paragraph 36) surrounding the lamp 20.

Independent Claim 21 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 21 requires, in addition, an electrical circuit connected to the lamp 20 and including means for shutting off a source of power to the lamp 20 upon the detection of a predetermined excessive heat condition. In the exemplary embodiment, the temperature sense portion of the temperature sense and leak detection printed circuit board assembly 56 and ballast control circuit printed circuit board 58 (page 6, paragraph 31, page 8, paragraph 37, page 9, paragraph 38 and Figs. 3 and 4) correspond to the excessive heat

detection and shut off means of Claim 21. Please note Applicants' correction of reference numeral 50 to 56 in Fig. 3 in the first Amendment, as suggested by the examiner.

Independent Claim 31 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 31 requires, in addition, an electrical circuit connected to the lamp 20 and including means for shutting off a source of power to the lamp 20 upon the detection of leakage of water into the lamp housing. In the exemplary embodiment, the leak sense portion of the temperature sense and leak detection printed circuit board assembly 56 and ballast control circuit printed circuit board 58 (page 6, paragraph 31, page 8, paragraph 37, page 9, paragraph 38 and Figs. 3 and 4) correspond to the leak detection and shut off means of Claim 31.

Independent Claim 41 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 41 requires, in addition, an electrical circuit connected to the lamp 20 and including a ballast 60 (page 6, paragraph 31 and Fig. 3) and means for shutting off a source of power to the ballast 60 in the event of the detection of a fault in the lamp 20. In the exemplary embodiment, silicon controlled rectifier 96 and ballast power relay 98 (page 9, paragraph 38 and Fig. 4) correspond to the fault detection and shut off means of Claim 41.

Independent Claim 51 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 51 requires, in addition, an electrical circuit connect to the lamp 20 and including a ballast and means for indicating power status and/or fault status. In the exemplary embodiment, ballast 60, LED 100 and LED 102 (page 6, paragraph 31, page 9, paragraph 38 and Figs. 3 and 4) correspond to the ballast and indicating means of Claim 51.

Independent Claim 61 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 61 requires, in addition, that the lamp 20 have a color temperature of at least about five thousand K (page 5, paragraph 29).

Independent Claim 71 is similar to Claim 1 in its recitation of elements, except that Claim 71 requires, in addition, a reflector 36 (page 6, paragraph 30 and Fig. 1) mounted in the housing 12 and surrounding the lamp 20, and an electrical circuit (pages 8 and 9, paragraphs 36 -38 and Figs. 3 and 4) connected to the lamp and including means for shutting off a source of power to the lamp 20 upon the detection of a predetermined excessive heat condition or leakage of water into the lamp housing 12. The structure of the Fig. 1 exemplary embodiment corresponding to this means has already been identified above.

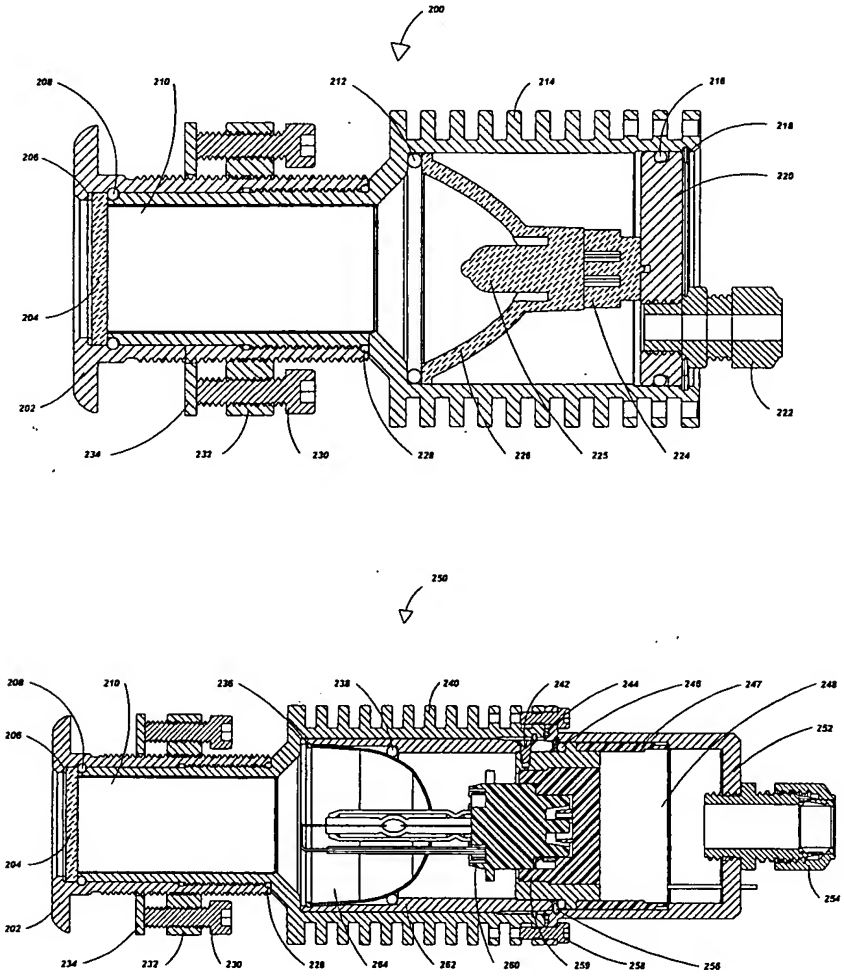
Independent Claim 72 is directed to the light pipe embodiment described on pages 10 and 11, paragraph 42 and illustrated in Fig. 6. Claim 72 calls for a hollow lamp housing which is made up of hemispherical housing portions 126 and 130 in Fig. 6, a lamp 122, and lamp mounting means. An un-numbered lamp socket in Fig. 6 is the structure corresponding to the lamp mounting means of Claim 72. Claim 72 further calls for a light pipe 134 supported in a second portion 130 of the housing. Claim 72 further calls for a thru-hull fitting assembly which in the exemplary embodiment includes flange 38, plates 140 and 142 and bolts 144.

Independent Claim 76 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 76 requires, in addition, a reflector mounted in the lamp housing and surrounding the lamp, and having a hybrid inner parabolic section and an outer elliptical section. See reflector 36 and sections 36a and 36b described on page 8, in paragraph 36 and Figs. 1 and 2.

Independent Claim 77 is similar to Claim 1 in its recitation of elements, except that the former does not require that the window be made of sapphire. Claim 77 requires, in addition, at least one thermal insulating sleeve 86 (page 7, paragraph 33 and Fig. 1) surrounding the forward end of the lamp housing.

Independent Claim 78 is directed to the alternate embodiments of Figs. 7 and 8 (reproduced hereafter) that use a reflective tube 210 to convey light. Claim 78 calls for a lamp housing 214 or 240, a lamp 225 or 260, and lamp mounting means. In Figs. 7 and 8, the sockets 224 and 259

correspond to the lamp mounting means. See pages 11-12, paragraphs 43-45. Claim 78 further calls for a hollow reflective tube 210 for conveying light from the lamp 225 for 260. Claim 78 calls for a window 204 over an end of the hollow reflective tube 210, and a second portion of the housing supporting the tube 210. This housing portion of the exemplary embodiments illustrated in Figs. 7 and 8 does not have a reference numeral. Claim 78 finally calls for a thru-hull fitting assembly connected to the forward end of the housing portion that supports the reflective tube 210, which in the embodiments illustrated in Figs. 7 and 8 includes bezel 202, jacking screws 230, jacking ring 232 and jacking plate 234.



Applicants' Figs. 7 and 8

Independent Claim 81 is directed to a thru-hull light comprising a hollow lamp housing 12 with a forward end configured to mate with a hole in the hull of a vessel, a lamp 20, a socket 22 for supporting the lamp, and a transparent scratch resistant window 74 extending and sealing a forward end of the lamp housing 12. See page 5, 6 and 7, paragraphs 29 and 34 and Fig. 1.

The patentability of the various dependent claims separate from their independent parents is not being argued so they need not be individually summarized.

VI. Grounds of Rejection to be Reviewed on Appeal

Whether the subject matter of Claim 1 would have been obvious over the combination of U.S. Patent No. 4,954,932 of Isenga in view of U.S. Patent No. 4,940,922 of Schuda et al.

Whether the subject matter of Claim 11 would have been obvious over the combination of Isenga in view of Schuda et al.

Whether the subject matter of Claim 21 would have been obvious over the combination of Isenga in view of U.S. Patent No. 6,538,394 of Volk et al.

Whether the subject matter of Claim 31 would have been obvious over the combination of Isenga in view of U.S. Patent No. 6,545,428 of Davenport et al.

Whether the subject matter of Claim 41 would have been obvious over the combination of Isenga in view of U.S. Patent No. 6,791,275 of Shackle.

Whether the subject matter of Claim 51 would have been obvious over the combination of Isenga in view of Shackle.

Whether the subject matter of Claim 61 would have been obvious over the combination of Isenga in view of U.S. Patent No. 6,636,003 of Rahm et al.

Whether the subject matter of Claim 71 would have been obvious over the combination of Isenga in view of Schuda et al., Volk et al. and Davenport et al.

Whether the subject matter of Claim 72 would have been obvious over the combination of Isenga in view of U.S. Patent No. 5,825,954 of Dunn et al.

Whether the subject matter of Claim 76 would have been obvious over the combination of Isenga in view of Schuda et al.

Whether the subject matter of Claim 77 would have been obvious over the combination of Isenga in view of U.S. Patent No. 6,638,088 of Richardson.

Whether the subject matter of Claim 78 would have been obvious over the combination of Isenga in view of U.S. Patent No. 5,748,816 of Jaksic et al.

Whether the subject matter of Claim 81 would have been obvious over the combination of Isenga in view of Schuda et al.

VII. Argument

The determination of obviousness under 35 U.S.C. Section 103 depends on four underlying factual issues: 1) the scope and content of the prior art; 2) the differences between the prior art and the claims at issue; 3) the level of ordinary skill in the art; and 4) the evaluation of any objective evidence of non-obviousness such as commercial success, long felt need, failure of others, etc. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Making the assessment of the differences between the prior art and the claimed subject matter under Section 103 specifically requires consideration of the claimed invention "as a whole." *Ruiz v. A.B.Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004). Inventions are typically new combinations of existing principles or features. *Envtl. Designs Ltd. v. Union Oil Co.*, 713 F.2d 693,

698 (Fed. Cir. 1983). Thus the "as a whole" requirement of Section 103 is very important, otherwise an obviousness assessment might simply break a claimed invention into its component parts, and then find the individual components in the prior art. Such an assessment, using the inventor's claim as a road map, amounts to impermissible hindsight reconstruction. This improper method of determining obviousness would discount the value of combining various existing features or principles in a new way to achieve a new and useful result - which is often the essence of valuable innovation.

To guard against hindsight reconstruction, in order to establish a *prima facie* case of obviousness during *ex parte* examination of a patent application pending in the USPTO, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ.2d 1438 (Fed. Cir. 1991).

In the final Office Action, independent Claim 1 was rejected for obviousness over Isenga in view of Schuda et al. The examiner contends that while Isenga does not specifically teach the window being made of sapphire, it allegedly would have been obvious to modify the transom light of Isenga to incorporate the sapphire window of Schuda et al. "in order to provide a resilient and thermally conductive window in protecting the light." (final Office Action, page 9, paragraph 23). The examiner further notes that "[i]t is also obvious that sapphire windows are used in high-intensity discharge lamp applications, whereby sapphire's high thermal conductivity provides efficient heat dissipation." (final Office Action, page 9, paragraph 23). This obviousness rejection is improper because it fails to make out a *prima facie* case under *In re Vaeck, supra.*

Isenga discloses a transom light having a disc-shaped transparent lens 43 molded from polycarbonate (column 6, line 11). The transom light of Isenga utilizes a conventional light bulb 17,

i.e., an incandescent light bulb. Isenga is concerned with the problems of the decorative appearance of the bezel and water leakage through screw holes in the bezel. In addition, Isenga is concerned with water leakage between the lens and the housing flange and between the housing flange and the hull. Isenga is further concerned with the problem of providing at least two gaskets which increases production costs, complicates installation and adds to the overall thickness of what is desirably a flush mounted transom light. Isenga is not concerned with the problem of the scratching of the window of a thru-hull light from hull cleaning, nor is Isenga concerned with breakage of the window due to wave slap. Furthermore, Isenga uses a conventional incandescent light bulb and not a high intensity discharge (HID) lamp. Therefore, Isenga is not concerned with heat dissipation from the interior of the housing.

Schuda et al. discloses a short-arc flashlamp having an internal integral reflector. The flashlamp has a window assembly 16 which couples to the forward end of a body section 14 formed of a dielectric material which defines the internal reflector 11. The window assembly 16 includes a transparent circular window 30 formed of a sapphire disc. Schuda et al. gives no indication why the window 30 is made of sapphire. The problem addressed and solved by Schuda et al. is to provide an internally integral reflector in a short-arc flashlamp, since flashlamps with external reflectors develop oxides on their surface and absorb short wave length light, thereby seriously degrading the spectral performance of the lamp when operated at relatively high current pulses. Schuda et al. is not concerned with heat dissipation from a lamp housing, nor is Schuda et al. concerned with scratching on the window of a lamp housing.

The examiner has failed to make out a *prima facie* case of obviousness of Claim 1 based on the combination of Isenga and Schuda et al. Neither Isenga nor Schuda et al. is concerned with the heat dissipation from a lamp housing, nor the scratching of a window of a lamp housing when the lamp housing is used as part of a thru-hull light fixture. The fact that Isenga is not concerned with the problem of heat dissipation is evident by the use of polycarbonate for his lens 43, which is a very poor thermal conductor. Therefore, there is no suggestion or motivation in either of these references to substitute the sapphire window of Schuda et al. for the polycarbonate lens of Isenga. Moreover, Isenga utilizes an incandescent light bulb, not an HID lamp. A sapphire window is an extremely

high cost item available from very few suppliers and is very difficult to machine. Accordingly, one skilled in the art of making thru-hull lights would not have any incentive to incorporate the sapphire window of Schuda et al. into the transom light of Isenga. It is undeniable that Isenga doesn't even need heat dissipation since it uses an incandescent light bulb, and the high cost of a sapphire window is a teaching away from the examiner's proposed substitution for Isenga's low cost polycarbonate lens.

Only the Applicants' own disclosure describes the benefits of utilizing the flat, disc-shaped window 74 made of sapphire. It is improper to use Applicants' own disclosure to provide the teaching or suggestion that supports an obviousness rejection based on the combination of prior art references. All the examiner has done is separately identify in Schuda et al. a key element (sapphire window) missing from Isenga and combined them in a manner that he feels meets Claim 1, citing advantages nowhere discussed or suggested in the prior art references themselves or knowledge generally available to one of ordinary skill in the art of designing thru-hull lights, but gleaned only with the aid of Applicants' disclosure. This is quintessential impermissible hindsight reconstruction. The prior art relied upon by the examiner simply does not teach or suggest a light specifically constructed for thru-hull installation and having a sapphire window. The fact that, as of Applicants' filing date thru-hull lights already existed and that other non-thru-hull lights with sapphire windows already existed, but not for thru-hull mounting, falls well short of the factual basis needed to establish a proper case of obviousness of the invention of Claim 1. Fittingly, Applicants' are reminded of Thomas Edison's U.S. Patent No. 223,898, which claimed an electric lamp "consisting of a filament of carbon of high resistance . . . secured to metallic wires." It was Edison's crucial selection of carbon that made a lasting incandescent light. The Board should reverse of the obviousness rejection of Claim 1 over the combination of Isenga and Schuda et al.

Applicants disagree with the obviousness rejections set forth with regard to Claims 2-10. However, since Claim 1 is patentable over Isenga and Schuda et al., it follows that Claims 2-10, which depend therefrom, are also patentable over this same prior art. Therefore, it is unnecessary to set forth Applicants' arguments separately traversing the obviousness rejections of Claims 2-10.

Independent Claim 11 has been rejected for alleged obviousness over Isenga and Schuda et al. The examiner admits that Isenga does not teach the lamp having an elliptical reflector, but alleges it would have been obvious to substitute the elliptical reflector of Schuda et al. into a transom light of Isenga "in order to collimate and focus the beam of light." (final Office action, page 15, paragraph 30). This obviousness rejection is respectfully traversed. In column 2, lines 52-55, Schuda et al. states that "reflector 11 may be parabolic, elliptical or aspherical in shape to provide a particularly desired collimation of light." The transom light of Isenga has no reflector, and Isenga is not concerned with the beam pattern of the transom light, or any particular benefits to be achieved by utilizing a special reflector in an underwater thru-hull light. Schuda et al. is concerned with providing a reflector with a specialized type of short-arc flashlamp and with the shortcomings of utilizing an external reflector. This problem is solved by Schuda et al. utilizing a body section 14 formed of dielectric material which defines an internal reflector 11. The integral internal reflector 11 of Schuda et al. is totally incompatible with the transom light design of Isenga, and therefore, it would not have been obvious to provide the integral internal reflector 11 of Schuda et al. with an elliptical shape into the transom light of Isenga. As stated on page 8, paragraph 36 of Applicants' disclosure, the shape and size of its reflector 36 is designed so that the light reflected from the lamp 20 will pass through a relatively small opening defined by the unobstructed portions of the sapphire window 74. The sapphire window 74 is relatively expensive, but can be made less expensive by utilizing a smaller window, thereby providing the additional benefit of deceasing the size of the hole that must be cut through the hull of the vessel. Since the transom light of Isenga utilizes an inexpensive polycarbonate window 43 and has an incandescent light bulb 17, there is no need for a specialized elliptical reflector in the transom light. Accordingly, the examiner has failed to make a *prima facie* case of obviousness of Claim 11 based on the proposed modification of Isenga in view of Schuda et al.

Applicants disagree with the examiner's obviousness rejections of Claims 12-20 which depend from independent Claim 11. However, since Claim 11 is allowable, it is not necessary to separately argue the obviousness rejections of Claims 12-20.

Independent Claim 21 has been rejected for alleged obviousness over Isenga in view of Volk et al. The examiner admits that Isenga does not teach an electric circuit having a means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition. However, the examiner alleges that it would have been obvious to modify the transom light of Isenga to incorporate the thermal shutdown circuit of Volk et al. "to ensure an additional safety measure for the light, as well as the passengers of the vessel." (final Office Action, page 21, paragraph 39). Isenga is not concerned with excessive heat conditions within the transom light, let alone shutting off a source of power to the conventional incandescent bulb 17 used therein. Volk et al. discloses a transistorized circuit for providing constant illumination with multiple light-emitting diodes (LEDs). The amount of current passing through the diodes depends significantly upon the forward voltage drop of the diodes, which themselves varies with size, process, temperature and aging. Thus, Volk et al. represents non-analogous art, and one skilled in the art of designing thru-hull lights utilizing lamps or light bulbs would not look to the art of control circuitry for LED illumination for concepts on how to improve a thru-hull light. The Federal Circuit has held that the combination of elements from non-analogous sources, in a manner that reconstructs the Applicants' invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness, *In re Oetiker*, 977 Fed 2d 1443, 24USPQ 2d 1443 (Fed Cir 1992). Accordingly, the Board should reverse of the obviousness rejection of Claim 21 over Isenga in view of Volk et al.

Applicants disagree with the examiner's obviousness rejections of Claim 22-30 which depend from independent Claim 21. However, since Claim 21 is allowable over the prior art, it is not necessary to separately argue these obviousness rejections.

Independent Claim 31 has been rejected for alleged obviousness over Isenga in view of Davenport et al. The examiner admits that Isenga does not specifically teach an electrical circuit having a means for shutting off a source of power to the lamp upon the detection of water leakage into the lamp housing. However, the examiner contends that it would have been obvious to modify the transom light of Isenga to incorporate the water-sensitive circuit of Davenport et al. "to ensure an additional safety measure for the light, as well as the passengers of the vessel." Isenga is not concerned with water leak detection and electrical power shut down. In fact, Isenga does not

disclose any kind of circuitry, whatsoever, let alone suggest any modifications or features thereof. Davenport et al. discloses a light fixture with a submersible enclosure for an HID lamp, said fixture including a ballast for supplying power to the HID lamp. The fixture also includes a water-sensitive circuit having a conductance that increases in response to water leaking into the enclosure for conducting current from the ballast and *limiting* the ballast voltage. Alternatively, the submersible enclosure of Davenport et al. may contain a power lead for supplying power to an electrical load such as a lamp ballast, a non-ballasted lamp or a color wheel. The power lead includes a fuse region that *corrosively* reacts in the presence of leaked water so as to sufficiently wither away the fuse region and terminate power to the load. Davenport et al. is directed to lighting for swimming pools, and there is nothing in either Isenga or Davenport et al., which suggests that the water-sensitive circuit of Davenport et al. should be incorporated into the transom light of Isenga. The lighting systems of Isenga and Davenport et al. are completely incompatible. Isenga uses a conventional low voltage incandescent light bulb 17 which does not have any ballast. Accordingly, the embodiment of the water-sensitive circuit of Davenport et al., which is designed to be utilized with a ballast, would not even work in the transom light of Isenga. The alternative embodiment of Davenport et al., which can be used with a non-ballasted lamp, utilizes a fuse which withers away over time until it terminates power to the load. Even if this embodiment of the water-sensitive circuit of Davenport et al. were incorporated into the transom light of Isenga, the result would still not be the invention of Claim 31 which requires "means for shutting off a source of power to the lamp *upon detection* of leakage of water into the lamp housing." Corrosive withering away of the fuse in Davenport et al. does not accomplish cutting off the source of power upon detection of water leakage. Accordingly, the Board should reverse the obviousness rejection of Claim 31 over the combination of Isenga and Davenport et al.

Applicants disagree with the obviousness rejections of Claims 32-39 which depend from independent Claim 31, However, since these claims are allowable for the same reasons as Claim 31, it is not necessary to separately argue the non-obviousness thereof.

Independent Claim 41 has been rejected for alleged obviousness over Isenga in view of Shackle. The examiner admits that Isenga does not specifically teach an electrical circuit to the lamp

including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp. However, the examiner contends that it would have been obvious to modify the transom light of Isenga to incorporate the fault-status circuit of Shackle "to ensure an additional safety measure for the light, as well as the passengers of the vessel." (final Office Action, page 32, paragraph 53). The examiner further states that "an indicator for power and/or fault provides a user an operating status for the lamp and an immediate warning to a malfunction." (final Office Action, page 32, paragraph 53). As already explained, Isenga is not concerned with any electrical aspects of the transom light, and indeed, discloses no circuitry or components thereof. Shackle discloses a low pressure gas discharge lamp ballast which includes a load circuit with a lamp, and a driver for supplying AC load current to the lamp. The driver includes circuitry for shutting off the load current in the presence of a lamp fault condition. Shackle is concerned with ultraviolet lamps used for sterilization of water and air in water supplies, air ventilation systems and the like. More particularly, because it is harmful for humans to view ultraviolet light, Shackle is concerned with providing an ON-OFF indicator for an ultraviolet lamp, which does not require the human to view the lamp to ascertain whether it is illuminated. Shackle has nothing to do with thru-hull lighting, and is therefore, non-analogous art. As stated in Applicants' disclosure, the electrical circuits of prior art thru-hull light have not had protection against water leakage, protection against galvanic action which can lead to excessive corrosion of their metal parts, nor power status or fault indicators. Without some teaching, motivation or suggestion in Isenga and Shackle expressly stated therein, or knowledge generally available to one of ordinary skill in the art of thru-hull lights, it is improper to modify Isenga in view of Shackle in the manner proposed by the examiner simply to achieve the invention of Claim 41 taught by Applicants "to ensure an additional safety measure." Accordingly, the Board should reverse the obviousness rejection of Claim 41 over the combination of Isenga and Shackle.

Applicants disagree with the obviousness rejections of Claims 42-50 which depend from independent Claim 41. However, since these claims are allowable for the same reasons as Claim 41, it is not necessary to separately argue the non-obviousness thereof.

Independent Claim 51 has been rejected for alleged obviousness over Isenga in view of Shackle. The examiner admits that Isenga does not teach means for indicating power status and/or fault status. (final Office Action, page 37, paragraph 60). The examiner states that it would have been obvious to modify the transom light of Isenga to incorporate the fault shut-off and indicating means of Schakle "to ensure an additional safety measure for the light, as well as passengers of the vessel." (final Office Action, page 38, paragraph 60). Independent Claim 51, together with Claims 52-60 which depend therefrom, are allowable over the combination of Isenga and Shackle for the same reasons as Claims 41-50.

Independent Claim 61 has been rejected for alleged obviousness over Isenga in view of Rahm et al. The examiner admits that Isenga does not teach that the lamp have a color temperature of at least 5000K, but alleges that it would have been obvious to incorporate the 5000K lamp of Rahm et al. "to ensure a desired quality of light." (final Office Action, page 42, paragraph 66). Rahm et al. discloses an arrangement of light-emitting diodes (LEDs) that produce a color temperature adjustable, white light. In column 2, lines 20-23, Rahm et al. indicates that the white LEDs are available over a range of color temperatures from 5000K to 8500K. Isenga has a conventional and incandescent light bulb 17 and is not concerned with the color temperature emitted thereby, whatsoever. Rahm et al. has nothing to do with thru-hull lights, and in fact, deals with the adjustable color temperature of white light from LEDs. One skilled in the art of thru-hull light design would not look to Rahm et al. for the solutions to any thru-hull lighting problems because it is non-analogous art. Furthermore, the LEDs of Rahm et al. are completely incompatible with the construction of the transom light of Isenga. Query: Where and how would the array of LEDs of Rahm et al. be mounted relative to body 15 and shroud 27 of Isenga? How would such LEDs be powered? For the foregoing reasons, the Board should reverse the obviousness rejection of independent Claim 61 over Isenga combined with Rahm et al.

Applicants do not agree with examiner's obviousness rejection of dependent Claims 62-70. However, it is not necessary to separately argue these rejections.

Independent Claim 71 has been rejected over the combination of Isenga, Schuda et al., Volk et al. and Davenport et al. Claim 71 is directed to a thru-hull light which includes a sapphire window and an electrical circuit for shutting off a source of power to the lamp upon detection of a predetermined excessive heat condition or upon the detection of leakage of water into the lamp housing. Claim 71 is allowable for the same reasons already argued with respect to independent Claims 1, 21 and 31. More specifically, the examiner admits that Isenga does not teach a sapphire window or an electrical circuit having means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition or upon the detection of leakage of water into the lamp housing. (final Office Action, pages 48 and 49, paragraph 74). The examiner then states:

> "It would have been obvious to modify the transom light of Isenga to incorporate the sapphire window of Schuda [sic], the thermal shutdown circuit of Volk, and the water-sensitive circuit of Davenport to ensure safety of the light, as well as the passengers of the vessel. It is also obvious that sapphire windows are used in high intensity discharge lamp applications, whereby sapphire's high thermal conductivity provides efficient heat dissipation." (final Office Action, pages 49 and 50, paragraph 74).

The obviousness rejection of Claim 71, combining bits and pieces of four prior art patents, using Applicants' claim as a road map, is yet another example of prohibited hindsight reconstruction. The present tense reference "*is* also obvious" is clearly at odds with Section 103 which specifies that the proper time of inquiry is when the invention *was* made. In other words, even assuming something is obvious today does not mean that it would have been obvious to a person of ordinary skill on November 21, 2003, the presumptive date when the invention of Claim 71 was made for purposes of Section 103, unless Applicants' were to swear behind a particular prior art reference. The Board should reverse the rejection of Claim 71 for obviousness over the combination of Isenga, Schuda et al., Volk et al. and Davenport et al.

Independent Claim 72 has been rejected for alleged obviousness over Isenga in view of Dunn et al. The examiner admits that Isenga does not teach the lamp having a light pipe disposed between the lamp and the front end portion of the housing. However, the examiner contends that it would be obvious to modify the transom light of Isenga to incorporate the light pipe of Dunn et al. "to

ensure safety of the light, as well as the passengers on the vessel." (final Office Action, page 50, paragraph 75). The transom light of Isenga utilizes a conventional incandescent light bulb 17 with a dome-shaped polycarbonate lens 43 in front of the same. It does not have any kind of fiber optic components, such as a light pipe, nor any need for the same. Dunn et al. discloses a submersible fiber optic lens assembly for use with fiber optic cable, which is arranged to maximize delivery of light from a fiber optic cable to a pool. The design and construction of the fiber optic lens assembly of Dunn et al. is completely incompatible with the structure of the transom light of Isenga. There is nothing in either Isenga or Dunn et al. which suggests that the transom light of Isenga should have any type of fiber optic component, such as a light pipe. Moreover, the examiner has not specified any reason or manner of insertion of the fiber optic cable 103 of Dunn et al. between the incandescent light bulb 17 and the polycarbonate 43 of Isenga. There is nothing suggesting the combination of Isenga and Dunn et al. based on ensuring safety of the light or passengers. Query, how does a light pipe ensure safety? For the foregoing reasons, the obviousness rejection of independent Claim 72, and Claims 73-75 which depend therefrom, over Isenga in view of Dunn et al. should be reversed.

Independent Claim 76 has been rejected for alleged obviousness over Isenga over Schuda et al. The examiner admits that Isenga does not have a reflector with the hybrid inner parabolic section and an outer elliptical section , but alleges it would have been obvious to provide such a reflector in view of Schuda et al. (final Office Action, page 53, paragraph 79). Claim 76 is allowable over Isenga and Schuda et al. for the same reasons argued above with respect to independent Claim 11. Moreover, Schuda et al. discloses the use of a parabolic reflector *or* an elliptical reflector, *not a hybrid* of the two, as required by Claim 76. Accordingly, the Board should reverse the obviousness rejection of Claim 76 over Isenga and Schuda et al.

Independent Claim 77 has been rejected for alleged obviousness over Isenga in view of Richardson. The examiner admits that Isenga does not teach a thermal insulating sleeve surrounding the forward end of the lamp housing. (final Office Action, page 54, paragraph 80). However, the examiner alleges that it would have been obvious to incorporate the thermal insulating sleeve of Richardson "in order to reduce the possibility of injury or damage due to high open circuit voltage,

environmental effects and the like [see Abstract of Richardson], which is commonly held in the art." (final Office Action, page 55, paragraph 80). As previously stated, Isenga is not concerned with excessive heat generated in a thru-hull light. Richardson is concerned with *fluorescent* lamp sockets and fluorescent lamp insulators used in *refrigeration* systems, and particularly the reliability of such sockets and their mounting arrangements in environmental conditions that have temperature extremes. Fluorescent lights are not used in thru-hull light fixtures. One skilled in the art in designing thru-hull light fixtures would not look to the art of fluorescent lights and sockets for their connectors in seeking to design an improved thru-hull light. Thus, Richardson is non-analogous art. The examiner cites base 56 and housing wall 58 illustrated in Figs. 5 and 10 of Richardson as providing thermal insulation. It would not have been obvious to incorporate base 56 or housing wall 58 of Richardson, which respectively surround the pins 54 and fluorescent glass envelope 42, in the thru-hull light of Isenga because these structures are completely incompatible. Moreover, there would be no motivation to make such a combination since the transom light of Isenga is not concerned with heat dissipation. In addition, even if base 56 and housing wall 58 of Richardson were somehow combined with Isenga, the result would still not be the invention of Claim 77 which requires "at least one thermal insulating sleeve surrounding the forward end of the lamp housing." The base 56 and the wall 58 of Richardson by being cylindrical, are incompatible with the frusto-conical portion 33 of the shroud 27 of Isenga. For the foregoing reasons, the obviousness rejection of Claim 77 over the combination of Isenga and Richardson should be reversed.

Independent Claim 78 has been rejected for alleged obviousness over Isenga in view of Jaksic et al. The examiner admits that Isenga does not have a hollow reflective tube disposed between the lamp and the front end portion of the housing. (final Office Action, page 55, paragraph 81). However, the examiner alleges that it would have been obvious to incorporate the hollow reflective tube of Jaksic et al. "in order to collimate and focus the beam of light." (final Office Action, page 56, paragraph 81). The transom light of Isenga has a simple incandescent light bulb 17, a surrounding shroud 27, and a dome-shaped polycarbonate lens 43. Isenga is not concerned with light dispersal or the light pattern. Jaksic et al. is concerned with optical tubes used in sensor arrangements, such as light barriers, with the receiver being coupled to the tube and with the transmitter either being separate from the tube or being coupled with the tube and arranged in the

area of the receiver. Reflections can be caused in the interior of such tubes both by external radiation sources and by radiation emitted by the transmitter itself, but lead to an undesired increase in the quantity of radiation detected by the receiver. Therefore, Jaksic et al. is concerned with the construction of an optical tube for suppressing interfering radiation. Multiple reflecting surfaces defined by ribs are provided in round, semi-square, oval, conical and other shapes. There is absolutely nothing in either Isenga or Jaksic et al. to suggest that the complex structures of Jaksic et al. ought to be inserted into the transom light of Isenga. Even if such a combination were made, the result would still not be the invention of Claim 78, which requires a reflective tube for conveying light from the lamp to the window since the reflectors of Jaksic et al. are not tubes. For the foregoing reasons, the Board should reverse the obviousness rejection of independent Claim 78, and Claims 79-80 which depend therefrom, over Isenga combined with Jaksic et al.

Independent Claim 81 has been rejected for alleged obviousness over Isenga in view of Schuda et al. The examiner admits that Isenga does not teach making the window out of scratch resistant material. (final Office Action, page 58, paragraph 84). However, the examiner alleges this would have been obvious in view of Schuda et al. This rejection is legally improper for the same reasons argued above with respect to Claim 1. Claims 82-90 which depend from independent Claim 81 are allowable for the same reasons, and their patentability need not be separately argued.

VII. Conclusion

The claims have all been improperly rejected based on a misapplication of 35 U.S.C. § 103. The examiner has failed to make out a *prima facie* case of obviousness of any of the independent claims, and has instead resorted to hindsight reconstruction to assemble the claimed subject matter from bits and pieces of prior art, with no suggestion in the references themselves or knowledge shown to be generally available to one of ordinary skill in the art of thru-hull light design. In many instances the references are incompatible. In others they are non-analogous. In still others, the references themselves teach away from the examiner's proposed combinations. The Board is requested to reverse the rejections of Claims 1-90.

A check in the amount of $250.00 is submitted herewith to cover the fee due with the filing of this brief. The Commissioner is hereby authorized to charge any additional fees, or credit any overpayment, to Deposit Account 50-0626.

Respectfully submitted,

7-29-05

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CLAIMS APPENDIX

1. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a sapphire window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window; and

means for providing a water-tight seal between the sapphire window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

2. The thru-hull light of Claim 1 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

3. The thru-hull light of Claim 2 wherein the reflector has an outer elliptical section.

4. The thru-hull light of Claim 2 wherein the reflector has an outer elliptical section and an inner parabolic section.

5. The thru-hull light of Claim 1 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

6. The thru-hull light of Claim 1 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

7. The thru-hull light of Claim 1 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

8. The thru-hull light of Claim 1 and further comprising an electrical circuit connected to the lamp and including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

9. The thru-hull light of Claim 8 wherein the electrical circuit further includes means for indicating power status and/or fault status.

10. The thru-hull light of Claim 1 wherein the lamp has a color temperature of at least about five thousand K.

11. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a reflector mounted in the interior of the lamp housing and having an elliptical section surrounding the lamp;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window; and

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

12. The thru-hull light of Claim 11 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

13. The thru-hull light of Claim 11 wherein the means for mounting the lamp includes a socket.

14. The thru-hull light of Claim 11 wherein the reflector also has an inner parabolic section surrounded by the elliptical section, the inner parabolic section having an outer diameter substantially equal to a diameter of the window.

15. The thru-hull light of Claim 11 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

16. The thru-hull light of Claim 11 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

17. The thru-hull light of Claim 11 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

18. The thru-hull light of Claim 11 and further comprising an electrical circuit connected to the lamp and including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

19. The thru-hull light of Claim 18 wherein the electrical circuit further includes means for indicating power status and/or fault status.

20. The thru-hull light of Claim 11 wherein the lamp has a color temperature of at least about five thousand K.

21. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing; and

an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

22. The thru-hull light of Claim 21 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

23. The thru-hull light of Claim 22 wherein the reflector has an inner parabolic section.

24. The thru-hull light of Claim 22 wherein the reflector has an outer elliptical section.

25. The thru-hull light of Claim 21 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

26. The thru-hull light of Claim 21 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

27. The thru-hull light of Claim 21 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

28. The thru-hull light of Claim 21 wherein the electrical circuit connected to the lamp further includes a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

29. The thru-hull light of Claim 28 wherein the electrical circuit connected to the lamp further includes means for indicating power status and/or fault status.

30. The thru-hull light of Claim 21 wherein the lamp has a color temperature of at least about five thousand K.

31. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing; and

an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

32. The thru-hull light of Claim 31 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

33. The thru-hull light of Claim 32 wherein the reflector has an outer elliptical section.

34. The thru-hull light of Claim 32 wherein the reflector has an inner parabolic section.

35. The thru-hull light of Claim 31 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

36. The thru-hull light of Claim 31 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

37. The thru-hull light of Claim 31 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

38. The thru-hull light of Claim 31 wherein the electrical circuit connected to the lamp further includes a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

39. The thru-hull light of Claim 38 wherein the electrical circuit connected to the lamp further includes means for indicating power status and/or fault status.

40. The thru-hull light of Claim 31 wherein the lamp has a color temperature of at least about five thousand K.

41. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing; and

an electrical circuit connected to the lamp and including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

42. The thru-hull light of Claim 41 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

43. The thru-hull light of Claim 42 wherein the reflector has an inner parabolic section.

44. The thru-hull light of Claim 42 wherein the reflector has an outer elliptical section.

45. The thru-hull light of Claim 41 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

46. The thru-hull light of Claim 41 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

47. The thru-hull light of Claim 41 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

48. The thru-hull light of Claim 41 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

49. The thru-hull light of Claim 41 wherein the electrical circuit connected to the lamp further includes means for indicating power status and/or fault status.

50. The thru-hull light of Claim 41 wherein the lamp has a color temperature of at least about five thousand K.

51. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing; and

an electrical circuit connected to the lamp and including a ballast and means for indicating power status and/or fault status.

52. The thru-hull light of Claim 51 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

53. The thru-hull light of Claim 52 wherein the reflector has an inner parabolic section.

54. The thru-hull light of Claim 52 wherein the reflector has an outer elliptical section.

55. The thru-hull light of Claim 51 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

56. The thru-hull light of Claim 51 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

57. The thru-hull light of Claim 51 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

58. The thru-hull light of Claim 51 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

59. The thru-hull light of Claim 51 wherein the electrical circuit connected to the lamp further includes means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

60. The thru-hull light of Claim 51 wherein the lamp has a color temperature of at least about five thousand K.

61. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to the forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp having a color temperature of at least about five thousand K;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window; and

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

62. The thru-hull light of Claim 61 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp.

63. The thru-hull light of Claim 62 wherein the reflector has an inner parabolic section.

64. The thru-hull light of Claim 62 wherein the reflector has an outer elliptical section.

65. The thru-hull light of Claim 61 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

66. The thru-hull light of Claim 61 and further comprising an electrical circuit connected to the lamp and including means for impeding a source of power to the lamp upon the detection of a predetermined excessive heat condition.

67. The thru-hull light of Claim 61 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

68. The thru-hull light of Claim 61 and further comprising an electrical circuit connected to the lamp and including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

69. The thru-hull light of Claim 68 wherein the electrical circuit further includes means for indicating power status and/or fault status.

70. The thru-hull light of Claim 61 wherein the window is made of a material selected from the group consisting of sapphire, quartz and glass.

71. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

a reflector mounted in the interior of the lamp housing and surrounding the lamp;

means for mounting the lamp in the interior of the lamp housing;

a sapphire window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

means for providing a water-tight seal between the sapphire window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing; and

an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition or upon the detection of leakage of water into the lamp housing.

72. A thru-hull light comprising:

a lamp housing having a hollow interior;

a lamp;

means for mounting the lamp in the interior of a first portion of the lamp housing;

a light pipe for conveying light from the lamp;

a second portion of the lamp housing supporting the light pipe; and

a thru-hull fitting assembly connected to a forward end of the second portion of the lamp housing for mounting the forward end of the second portion of the lamp housing in a hole in the hull of a vessel in a water-tight fashion.

73. The thru-hull light of Claim 72 and further comprising a reflector mounted in the interior of the first portion of the lamp housing and surrounding the lamp.

74. The thru-hull light of Claim 72 and further comprising a hot mirror positioned over a rear end of the light pipe that faces the lamp.

75. The thru-hull light of Claim 72 and further comprising a window made of a scratch resistant material positioned over a forward end of the light pipe that faces the water when the thru-hull light is installed in a vessel below the water line.

76. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

a reflector mounted in the interior of the lamp housing and surrounding the lamp and having a hybrid inner parabolic section and an outer elliptical section;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window; and

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

77. A thru-hull light comprising:

a lamp housing having a hollow interior;

a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in a hole in the hull of a vessel in a water-tight fashion;

a lamp;

means for mounting the lamp in the interior of the lamp housing;

a window extending across the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window;

at least one thermal insulating sleeve surrounding the forward end of the lamp housing; and

means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

78. A thru-hull light comprising:

a lamp housing having a hollow interior;

a lamp;

means for mounting the lamp in the interior of a first portion of the lamp housing;

a hollow reflective tube for conveying light from the lamp;

a window extending across the forward end of the hollow tube for permitting light from the lamp to be transmitted through the window;

a second portion of the lamp housing supporting the reflective tube; and

a thru-hull fitting assembly connected to a forward end of the second portion of the lamp housing for mounting the forward end of the second portion of the lamp housing in a hole in the hull of a vessel in a water-tight fashion.

79. The thru-hull light of Claim 78 and further comprising a glass reflector surrounding the lamp.

80. The thru-hull light of Claim 78 wherein the lamp is a hybrid Xenon/HID lamp.

81. A thru-hull light comprising:

a hollow lamp housing having a hollow interior and a forward end configured for mating with a hole in the hull of a vessel;

a lamp;

a socket supporting the lamp in the interior of the lamp housing; and

a window made of a scratch resistant transparent material extending across and sealing the forward end of the lamp housing for permitting light from the lamp to be transmitted through the window.

82. The thru-hull light of Claim 81 and further comprising means for providing a water-tight seal between the window and the forward end of the lamp housing to prevent water from entering the interior of the lamp housing.

83. The thru-hull light of Claim 81 and further comprising a reflector mounted in the interior of the lamp housing and surrounding the lamp, the reflector having an outer elliptical section and an inner parabolic section.

84. The thru-hull light of Claim 81 and further comprising a thru-hull fitting assembly connected to a forward end of the lamp housing for mounting the forward end of the lamp housing in the hole in the hull of the vessel in a water-tight fashion.

85. The thru-hull light of Claim 81 and further comprising an end cap and means for securing the end cap to a rearward end of the lamp housing in a water-tight fashion.

86. The thru-hull light of Claim 81 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of a predetermined excessive heat condition.

87. The thru-hull light of Claim 81 and further comprising an electrical circuit connected to the lamp and including means for shutting off a source of power to the lamp upon the detection of leakage of water into the lamp housing.

88. The thru-hull light of Claim 81 and further comprising an electrical circuit connected to the lamp and including a ballast and means for shutting off a source of power to the ballast in the event of the detection of a fault in the lamp.

89. The thru-hull light of Claim 81 wherein the electrical circuit further includes means for indicating power status and/or fault status.

90. The thru-hull light of Claim 81 wherein the lamp has a color temperature of at least about five thousand K.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None